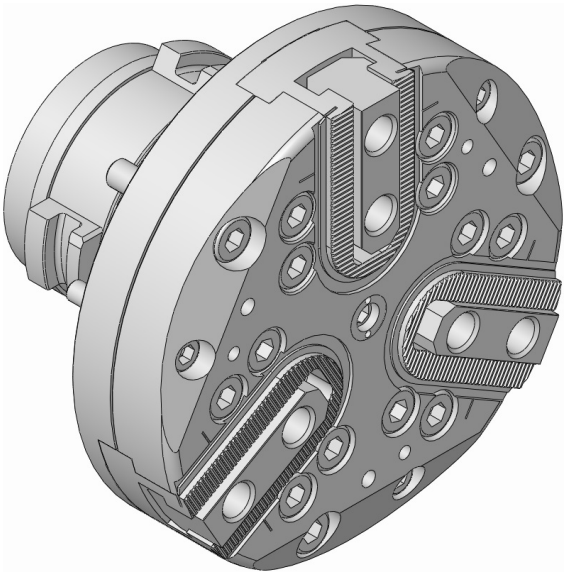
HAINBUCH
SPANNENDE TECHNIK



Installation manual

EN

Jaw module

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»Translation of original installation manual«

1 General

1.1 Information about this manual

This manual enables safe and efficient handling of the clamping device.

The manual is a component of the clamping device and must be kept in the immediate vicinity of the clamping device where it is accessible for personnel at all times. Personnel must have carefully read and understood this manual prior to starting all tasks. The basic prerequisite for safe work is compliance with all the safety instructions and handling instructions in this manual.

Illustrations in this manual are provided for a basic understanding and may deviate from the actual model of the clamping device.

It is assumed that the reader is familiar with standard procedures, such as cleaning the mounting surfaces.

1.2 Explanation of symbols

Safety instructions

Safety instructions are indicated by symbols in this operating manual. The safety instructions are introduced by signal words that express the scope of the hazard.

The safety instructions must be strictly adhered to, you must act prudently to prevent accidents, personal injury, and material damage.

DANGER

… indicates an imminent dangerous situation than can result in death or serious injury if it is not avoided.

WARNING

… indicates a possible dangerous situation that can result in death or serious injury if it is not avoided.

CAUTION

… indicates a possible dangerous situation that can result in minor or light injury if it es not avoided.

NOTE

… indicates a possible dangerous situation that can result in material damage if it is not avoided.

Tips and recommendations

… indicates useful tips and recommendations, as well as information for efficient and trouble-free operation.

1.3 Limitations of liability

All information and instructions in this operating manual have been provided under due consideration of applicable standards and regulations, the current state of technology, as well as our many years of experience.

The manufacturer assumes no liability for damage due to:

- Failure to follow the instructions in the manual
- Non-intended use
- Deployment of untrained personnel
- Unauthorized conversions
- Technical changes
- Use of non-approved spare parts

The actual scope of delivery can vary from the explanations and graphic representations provided in this manual in the case of special versions, if supplemental order options are desired, or on the basis of the latest technical changes.

The agreed obligations in the delivery contract, the general terms and conditions, as well as delivery conditions of the manufacturer, and the statutory regulations valid at the time the contract was concluded, apply.

1.4 Max. RPM

CAUTION!

The maximum permissible RPM of the clamping device must be redetermined in every application case, on the basis of the clamping forces required for machining.

Of all RPMs of the groups specified, the **lowest given RPM** must always be used.

1.5 Copyright

This manual is protected by copyright and is provided exclusively for internal purposes.

Delivery of the operating manual to third parties, duplication in any form – including excerpts – as well as exploitation and/or communication of the content, are not permitted [except for internal use] without written approval from the manufacturer.

Actions to the contrary make damage compensation mandatory. We reserve the right to enforce additional claims.

1.6 Scope of delivery

All tools and accessories that are not included in the scope of delivery are marked as optional.

In scope of delivery:

- 1 Jaw module

Optionally the scope of delivery includes:

- Claw jaws
- Soft jaws

1.7 Spare parts

WARNING!

Safety risk if the wrong spare parts are used!

Incorrect or defective spare parts can cause damage, malfunction, or total failure; they can also impair safety.

- Only use manufacturer's original spare parts.

Only purchase spare parts from authorized dealers or direct from the manufacturer. Addresses are in the appendix.

1.8 Warranty terms

The warranty terms are included in the manufacturer's terms and conditions.

2 Safety

This section provides an overview o fall the important safety aspects for optimal protection of personnel, as well as for safe and trouble-free operation.

2.1 Responsibility of the customer

The device is used in industrial applications. Consequently the owner of the device is subject to legal industrial safety obligations.

In addition to the safety instruction in this manual, generally valid safety and accident protection guidelines, and environmental protection guidelines must be adhered to and complied with for the area of implementation of the device.

WARNING!

Risk of injury!

Declining operating force, for example by declining energy supply, may cause serious personal injury.

- The product may be used only on machines where it is ensured, that during use, the operating force does not drop.

2.2 Personnel requirements

WARNING!

Danger of injury due to insufficient qualification!

Improper handling of the clamping device can cause serious injury or material damage.

- Only have activities performed by personnel who are qualified to perform these activities.

The following qualifications are cited in the operating manual for the various activity areas.

- **Specialized personnel**
  are personnel who due to their specialized training, skills, and experience, as well as knowledge of the applicable regulations, are capable of executing the tasks assigned to them and of recognizing and avoiding possible hazards on their own.
- **Hydraulic specialist**
  The hydraulic specialist has been trained for the particular task area in which he is active and is familiar with the relevant standards and regulations. Due to his specialized training and experience the hydraulic specialist can perform tasks on hydraulic equipment and recognize and avoid possible dangers on his own.
- **Electric specialist**
  The electric specialist has been trained for the particular task area in which he is active and is familiar with the relevant standards and regulations.
  Due to his specialized training and experience the electric specialist can perform tasks on electric equipment and recognize and avoid possible dangers on his own.

Only persons from whom it can be expected that they reliably execute their work are considered as personnel. Persons whose capability to react is impaired, for instance through drugs, alcohol, or medication, are not approved.

- Comply with age-specific and job-specific regulations that are applicable at the installation site when selecting personnel.

2.3 Intended use

The clamping device is designed for installation in a machine tool according to CE compliant. Within the machine tool the clamping device is designed exclusively as a through-bore chuck for bar work and / or as an end-stop chuck for chuck work.

The clamping device should only be mounted, operated, maintained, and cleaned by instructed, specialized personnel.

Intended use also includes compliance with all the instructions in this manual.

The clamping device is to be used for the case of application contractually agreed between the producer/deliverer and the user, as well as such cases of application described in the product description which are also in accordance with the technical values.

The safe function of the clamping device is, as far as it can be foreseen, guaranteed when it is used for the intended purpose in accordance with the appropriate safety regulations.

Any use that extends beyond the intended use, or any other use of the clamping device is considered to be misuse and can cause dangerous situations.

WARNING!

Danger due to misuse!

Misuse of the clamping device can cause dangerous situations.

Particularly refrain from the following uses of the clamping device:

- Use in machines other than machine tools.
- Use in machine tools with technical data other than that specified on the clamping device.

Claims of any type due to damage arising from non-intended use are excluded.

Unintended and improper use of the Power Chuck is for example

- If workpieces are not clamped properly
- If safety regulations are disregarded and persons are working at the clamping device without additional protective devices e.g. for machining.
- If the clamping device is used for machines or tools for which it is not intended.

2.4 Personal protective equipment

Wearing of personal protective equipment is required to minimize health hazards when working with the device.

- Always wear the protective equipment necessary for the respective task when working with the device.
- Follow the instructions that have been posted in the work area.

Always wear

For all tasks always wear:

Protective work clothing

is tight-fitting work clothing with low resistance to tearing, with tight sleeves, and without projecting parts. It is primarily used to protect against entanglement by moving machine parts.

Do not wear rings, chains, or other jewelry.

Safety footwear

for protection against heavy falling parts and slipping on slippery substrates.

For special tasks wear

Special protective equipment is required when executing special tasks. Separate reference is made to this equipment in the specific sections of this manual. This special protective equipment is explained below:

Hard hat

to protect against falling and flying parts and materials.

Protective goggles

to protect eyes from flying parts and liquid splashes.

Protective gloves

to protect hands from friction, abrasion, puncture wounds, or deeper injuries, as well as from contact with hot surfaces.

2.5 Special dangers

In the following section residual risks are cited that occur due to installation of the clamping device in a machine tool. In each case the residual risks that have been determined based on a risk analysis of the machine must be specified by the customer.

- Follow the safety instructions listed here and the warnings in the other sections of this manual to reduce health hazards and to avoid dangerous situations.

Horizontal / lying parts

WARNING!

Danger of injury due to horizontal parts!

Before transporting the clamping device in horizontal condition:

- Put the clamping device on a non-slip pad
- Screw in the eye bolts

Suspended loads

WARNING!

Life-threatening danger due to suspended loads!

Some clamping devices must be lifted with a crane. When lifting the clamping device there is a life-threatening hazard due to falling parts or parts swinging out of control.

- Never step under suspended loads.
- Comply with the instructions concerning the intended attachment points. Ensure that the sling gear is securely seated!
- Do not attach lifting gear in projecting components.
- Only use approved hoists and sling gear with sufficient bearing capacity.
- Do not use rope and belts that are torn or frayed.

Moving parts

WARNING!

Danger of injury due to moving parts!

Rotating parts of the clamping device can cause serious injuries.

- Do not reach into moving parts or handle moving parts during operation.
- Note the gap dimensions of moving parts.
- Do not open covers when the device is in operation.
- Be aware of afterrun time:
  Prior to opening the covers ensure that all parts have come to a standstill.
- Wear tight-fitting protective work clothing in the danger zone.

Wrong clamping of the work piece

WARNING!

Danger of injury due to incorrect clamping of the work piece!

Incorrect work piece clamping may lead to the ejection of the work piece and result in serious injuries.

Under dimensioned (tolerance) parts can lead to incorrect clamping!

- Check the unmachined work pieces at random on dimensional accuracy.

Too low supply pressure can lead to the reduction of clamping force!

Too high supply pressure can lead to damage of the components of the clamping device!

- Check and adjust, if necessary, the supply pressure regularly.
- Do random checks of the unmachined work pieces on dimensional accuracy.

Missing changing parts

WARNING!

Danger of injury due to missing changing parts!

When operating the clamping device without changing parts [segmented clamping bushing, clamping heads, work piece end-stops] there is a higher danger of crushing injuries due to the stroke of movable components of the clamping device.

- The clamping process may not be initiated without assembled segmented clamping bushing and/or work piece end-stop.

Parts with sharp edges

WARNING!

Risk of injury!

When screwing in individual components such as for example work piece end-stops, threaded adapters and similar devices that are equipped with an external thread or wear caused by burrs, there is risk of cutting.

- The operation must be done only by qualified personnel.
- Wearing of gloves / [PSA] is required!

2.6 Further warnings

WARNING!

Risk of injury!

Never reach for the clamping device while the spindle is rotating. Before starting to work on the mandrel, make sure the machine spindle cannot be put in motion.

WARNING!

Risk of injury!

By repeated reworking or wear and tear of the clamping surfaces sharp edges and burrs may appear and lead to severe cutting damages.

WARNING!

Damage of clamping device!

The clamping device may be released exclusively in the standing condition!

2.7 Clamping force

The achieved clamping force can vary due to the maintenance condition of the clamping device [state of lubrication and degree of contamination] [see chapter »Maintenance«].

The clamping force must be checked at regular intervals. This requires the use of static clamping force measuring devices.

CAUTION!

Damages due to excessive draw and compressive force!

An excessive draw force and/or compressive force may damage the clamping device.

- The max. draw force and compressive force may not be exceeded.

2.8 Screws

Moving parts

WARNING!

Danger of injury due to screws and stud screws being accelerated out of the device!!

Screws and stud screws radially attached to the product can be accelerated out of the device and cause severe injuries.

- At the product radially mounted screws and stud screws which were loosened for assembly and maintenance must be re-tightened with the correct tightening torque!
  The tightening torque is given at the product itself, near the screw or threaded pin, and/or given in chapter »Bolt torque«.
- All screws or stud screws that are not marked with a tightening torque specification are tightened with the prescribed tightening torque and locked [medium-strength bonding] in the factory and should only be unscrewed after consultation with the manufacturer. If in doubt you must contact the manufacturer immediately do determine the subsequent procedure.

2.9 Functionality

NOTICE!

With high contamination of the clamping device the functionality is no longer guaranteed.

- The cleaning and maintenance intervals must be observed.

2.10 Environmental protection

NOTE!

Environmental hazard due to incorrect handling!

Incorrect handling of environmentally hazardous substances, particularly improper disposal, can cause significant environmental damage.

- Always comply with the instructions cited below
- If environmentally harmful substances should inadvertently get into the environment, initiate suitable measures immediately. If in doubt notify the responsible municipal authority about the damage.

The following environmentally harmful substances are used:

Lubricants

Lubricants like greases and oils can contain toxic substances. Ensure that they do not get into the environment.

The device must be disposed of by a specialized disposal company.

To achieve trouble-free operational performance of the clamping device only use HAINBUCH lubricants. See the appendix for reference addresses.

3 Technical data

3.1 General information

The jaw module is available in different sizes and variants.

Information about e.g.

- dimensions
- weight

you will find on the corresponding drawing that you can order at HAINBUCH.

For examples some technical data:

3.1.1 Variant RD

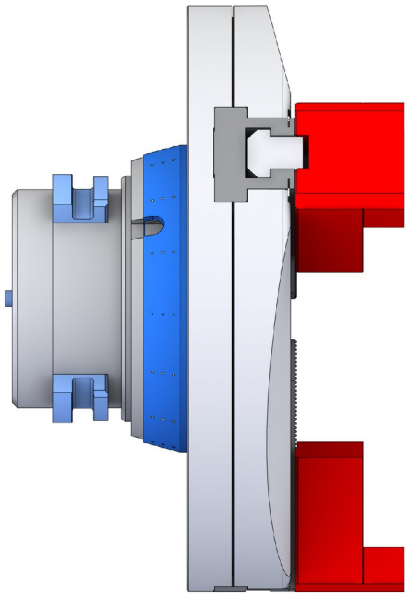


Fig. 1

Chuck size		65	65	80	100
Jaw module size		145	215	215	215
Concentricity [mm]		0,020			
Clamping range [mm]	A	115	183	183	186
Speed n max. [1/min]		5000	3000	3000	3000
max. actuating force at unscrewing the jaws [KN]		29	29	29	29
max. draw force axial [KN]		29	29	29	29
max. clamping force radial [KN]		60	60	60	60
Release stroke radial [mm]	C	0,9	0,9	0,9	1,8
Clamping reserve radial [mm]	D	0,7	0,7	0,7	1
Stroke per jaw [mm]	AT	1,6	1,6	1,6	2,8
Variant of gear cutting		1,5x60°	1,5x60°	1,5x60°	1,5x60°
Vibration circle-Ø	AX	~149	~220	~220	~220
max. permissible boring-Ø [mm]	BW	115	200	200	200
max. permissible boring depth [mm]	BX	15	15	15	15
Length without jaws [mm]	AI	37,5	37,5	37,5	37,5
Length with jaws [mm]	AJ	77	77	77	77
Weight [kg]		6,3	11,3	12,6	14,5
On stock		✓	✓	✓	✓
Order no.		10721/0001	10721/0002	10721/0003	10721/0004

3.1.2 Variant SE

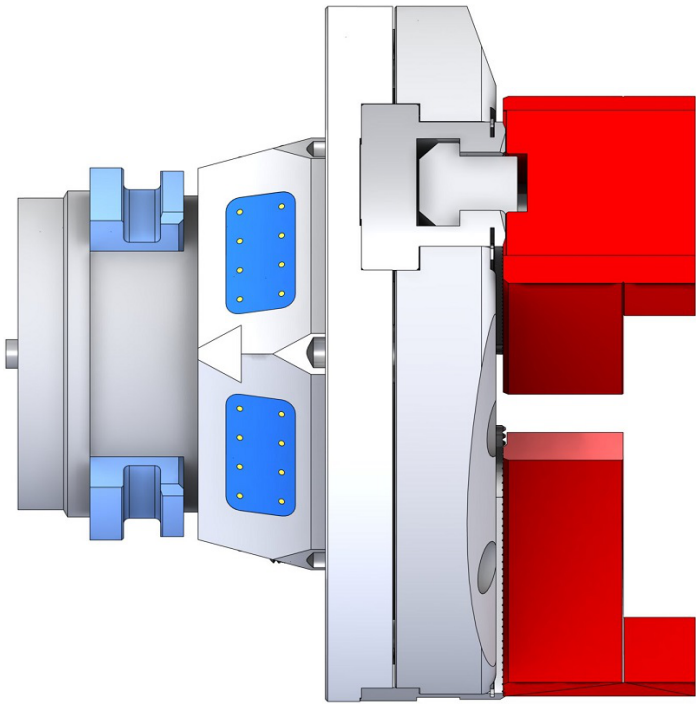


Fig. 2

Chuck size		65	65	100
Jaw module size		145	215	215
Concentricity [mm]		0,020	0,020	0,020
Clamping range [mm]	A	115	183	186
Speed n max. [1/min]		5000	3000	3000
max. actuating force at unscrewing the jaws [KN]		29	29	29
max. draw force axial [KN]		29	29	29
max. clamping force radial [KN]		60	60	60
Release stroke radial [mm]	C	0,9	0,9	1,8
Clamping reserve radial [mm]	D	0,7	0,7	1
Stroke per jaw [mm]	AT	1,6	1,6	2,8
Variant of gear cutting		1,5x60°	1,5x60°	1,5x60°
Vibration circle-Ø	AX	~149	~220	~220
max. permissible boring-Ø [mm]	BW	115	200	200
max. permissible boring depth [mm]	BX	15	15	15
Length without jaws [mm]	AI	37,5	37,5	37,5
Length with jaws [mm]	AJ	77	77	77
Weight [kg]		6,3	11,3	14,5
On stock		✓	✓	✓
Order no.		10720/0001	10720/0002	10720/0003

3.2 Operating conditions

Environment	Specification	Value	Unit
	Temperature range	15 - 65	°C

Mechanical actuating

In each possible operating condition the maximum draw force and compressive force may not be exceeded!

WARNING!

Risk of injury!

Using false technical data can lead to serious personal injury and property damage.

- The technical data [label on the product, assembly drawing] must be observed and may not be modified by the operator!

3.3 Dimensional sheet

Dimension sheets for the respective product can be requested from HAINBUCH.

3.4 Type designation

Fig. 3

The type designation is on the jaw module and includes the following information:

1 ID no. [marked with the # symbol]

2 Type designation and size

4 Structure and function

4.1 Overview RD*

1. Adjustable top jaw with serration
2. Base body
3. Locking screw
4. Coupling
5. CENTREX system for mm-precise insertion without aligning
6. Base jaw
7. Slot nut

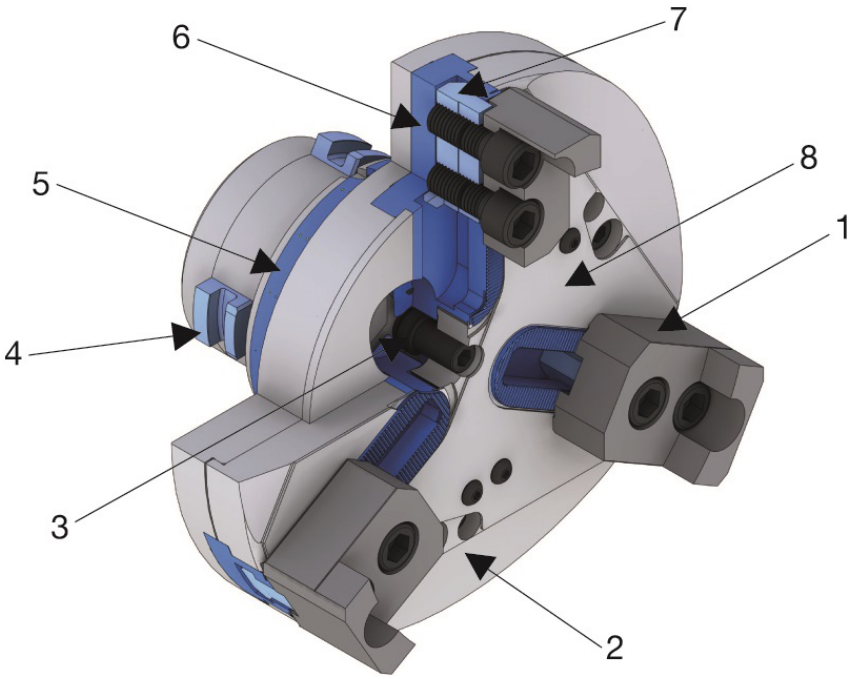


Fig. 4

4.2 Overview SE*

1. Adjustable top jaw with serration
2. Base body
3. Locking screw
4. Coupling
5. CENTREX system for mm-precise insertion without aligning
6. Base jaw
7. Slot nut

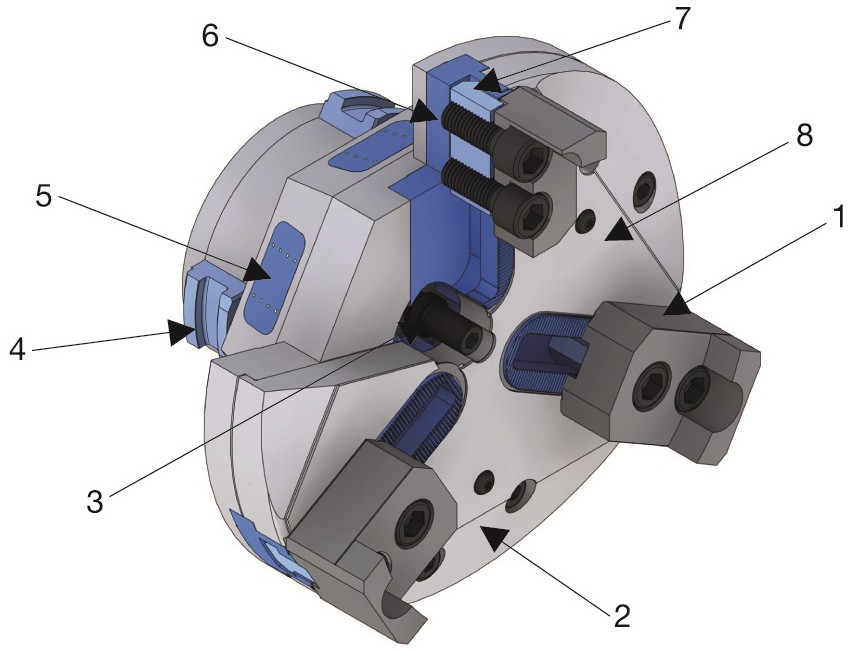


Fig. 5

* View as an example

4.3 Brief description

Small workpiece – small chuck

This is the simple formula of our new modular solution. Using the new small jaw module, about 80 % of usual components are covered, and for larger components it can be easily changed over to a large jaw module within 30 seconds.

The basic unit is a SPANNTOP chuck or TOPlus chuck. So add to this the jaw modules, clamping heads and mandrels; you achieve reliability, accuracy, and safety that traditional jaw chucks lack especially for I.D. clamping. Clamp from inside with a jaw chuck – at any rate this is hardly done by anyone. Those who have experience with HAINBUCH mandrels are aware of the unbelievable, even seeming almost impossible clamping situations that are feasible.

The new jaw module now completes a clamping system that offers the right solution for each clamping situation, without compromise.

Key advantages

- Minimal interference contour, optimal utilization of the jaws
- Flexible, fast and repeatable change-over to clamping head or mandrel clamping
- Deadlength clamping with jaws [e.g. claw jaw clamping on the blank]
- Rigid workpiece clamping with pull-back effect through the use of clamping head or mandrel [e.g. short clamping for machining finished parts]
- Full passage with actuation of the clamping head
- Ideal for sensitive clamping and delicate components
- Can be used as a pick-up chuck on sub spindles
- Also excellently suited for stationary use

CAUTION!

Risk of injury!

Risk of component fracture when using the jaw module for I.D. clamping.

- Use the jaw module only for O.D. clamping!

4.4 Optional Accessories

The accessories described here are not included in the scope of delivery.

Specially developed segmented clamping bushings match to the respective maximum RPM are available for each clamping device. Trouble-free and precise function of HAINBUCH clamping devices is only ensured when using original HAINBUCH segmented clamping bushings.

Lubricating grease and grease gun are required for cleaning and preservation of the clamping device. The lubricating grease is also specially matched for protection of the vulcanized segments of the segmented clamping bushings and increase their service life and elasticity by a significant factor.

4.4.1 Jaws

The jaw module can be used with a claw jaw set or with soft jaws.

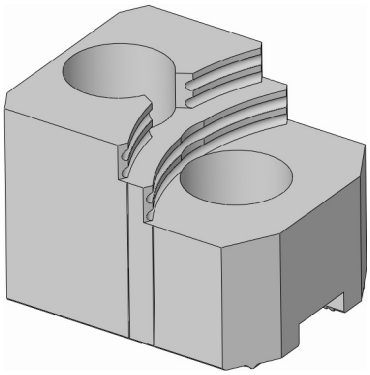


Fig. 6

Claw jaw set

counter bore	Order no.
Side 1: 25 – 34 – 43 - 52 mm	10723/0001
Side 2: 61 – 70 mm	
79 – 88 mm	10723/0002
97 – 106 mm	10723/0003

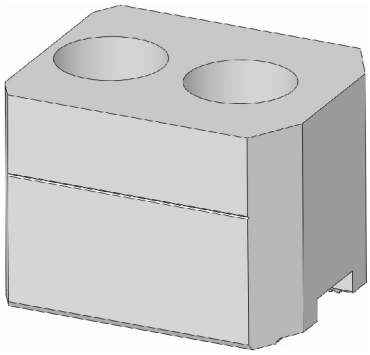


Fig. 7

Soft jaws

The soft jaws can be bored up to a max. ø115 mm [size 145] or ø200 mm [size 215].
They can be ordered with order number 10724/0001 from HAINBUCH.

CAUTION!

Risk of injury!

When boring the soft jaws remind the chapter »Boring the jaws«!

- Risk of component rupture by failure to observe!

4.4.2 Special grease

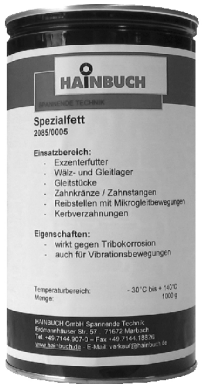


Fig. 8

The special grease has the order number 2085/0005; it can be ordered from HAINBUCH.

5 Transporting, packaging, storing

5.1 Safety instructions for transporting

Unbalanced package

WARNING!

Danger of falling due to an unbalanced package

Packed goods can have an unbalanced package. If attached incorrectly the package can tip and cause life-threatening injuries.

- Note the markings on the packages.
- Attach the crane hook in such a manner that it is located above the center of gravity.
- Carefully lift and see if the load tilts. If necessary change the attachment.

5.2 Symbols on the packaging

Fragile

Identifies packages with fragile or sensitive contents.

Handle the packed goods with care; do not allow them to fall, and do not subject them to impact.

Protect from moisture

Keep packed goods dry and protected against moisture.

5.3 Transport inspection

Check delivery immediately upon receipt to ensure that delivery is complete and to identify any transport damage.

Proceed as follows it there is apparent external damage:

- Do not accept the delivery, or only accept it with reservation.
- Note the extend of transport damage on the transport documents or on the transport company's delivery ticket.
- Submit a complaint.

Report any defect as soon as it is detected. Claims for damage compensation can only be enforced during the applicable periods for giving notice of lack of conformity.

5.4 Packaging

About the packaging

Individual packages are packed according to the expected transport conditions. Environmentally-friendly materials have been used exclusively for the packaging.

Packaging should protect the specific components from transport damage, corrosion, and other damage until installation. Therefore do not destroy the packaging, remove it just before installation.

The packed goods are sealed in foil airtight and packed in cartons. See the »Technical Data« section for the specific weight of the respective sizes.

Handling packaging materials

Dispose of packaging materials in accordance with the respectively valid statutory regulations and local guidelines.

NOTE!

Improper disposal causes environmental damage!

Packaging materials are valuable raw materials and in many cases they can be reused, or they can be effectively treated and recycled.

- Dispose of packaging materials in an environmentally responsible manner.
- Comply with locally applicable disposal guidelines. If necessary commission a specialized company to dispose of packaging.

5.5 Storing

Under certain circumstances instructions for storage and subsequent storage are affixed to the packages that extend beyond the requirements cited here.
Comply with these instructions accordingly.

Storage of packages

Only store packages under the following conditions:

- Do not store outdoors.
- Store in a dry and dust-free location
- Do not expose to aggressive media
- Protect from direct sunlight
- Avoid mechanical vibration
- Storage temperature: 15 bis 35 °C
- Relative humidity: max. 60 %
- For storage periods longer than 3 months:
  - Check the general condition of all parts and the packaging at regular intervals.
  - Touch up or re-apply anti-corrosion agents as needed

Subsequent storage of the clamping device

Only re-store the clamping device under the following conditions:

- Thoroughly clean the clamping device prior to subsequent storage [see section »Cleaning«]
- Thoroughly oil and grease the clamping device. [see section »Cleaning«]
- Store the clamping device in airtight foil
- The clamping device must be stored securely in position. If this is not guaranteed, use a suitable container for the clamping device or equip the shelf with a circumferential securing edge.

6 Assembly

6.1 Pre-consideration

- Screws are tightened according to the size of the screw and the general torque.
  To avoid axis-parallel warpage under load and to get stiffness turn in the screws evenly.
- To avoid precision error clean the screw joint surfaces and also the mating surfaces, see »Maintenance«.
  The ex works wetting of the plate surfaces and the clamping element is only corrosion protection. It's not functionally lubricated.
- The insertion of lubricant is provided only on the mechanical surfaces. Pay attention to the instructions for lubricants in the chapter »Maintenance«.
- Avoid too much lubricant on the bearing surface, as this can cause face runout.
- Seal rings (e.g. o-ring, quad-ring seal) and sealing surfaces must be lubricated.
  Note the information in the chapter »Maintenance«.
- Note that the function surfaces (plate surface, mating surface, cone surface and seal surface) may not be damaged.

CAUTION!

Wear safety shoes during the assembly and maintenance work.

Make sure that the starting of the spindle is impossible.

6.2 Preparation

The total weight of the jaw module depends on the size and can be as much as 15 kg.

NOTE!

Material damage due to falling of the jaw module!

When mounting the jaw module can fall and be damaged e.g. may cause material damage at the machine.

- Two people are always required for this task.
- Always handle carefully with the jaw module
- Always wear safety footwear.

6.2.1 Preparation of the machine for assembly

Before assembling the jaw module to the base end-stop of the clamping device must be disassembled.

Special tools required:

- Allen wrench
- Changing fixture

1. Remove the assembled clamping head [1] with a suitable changing fixture [2].

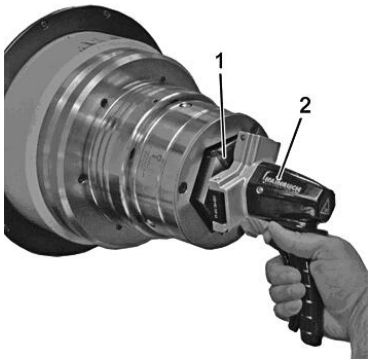


Fig. 9

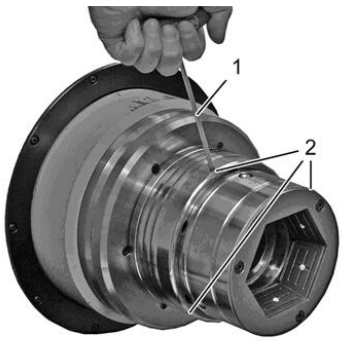


Fig. 10

2. Loosen the three clamping screws for the ground end-stop [2] in the circumference of the clamping device with an allen wrench [1].

Fig. 11

3. Remove the base end-stop [1].

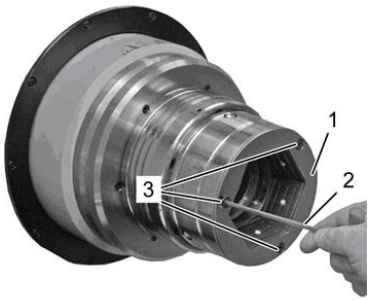


Fig. 12

For assembling to a TOPlus chuck:

4. Loosen the three countersunk screws [3] at the plate [1] by using an allen wrench [2].
5. Remove the plate [1].

6.2.2 Preparation of the jaw module

Special tools required:

- Allen wrench

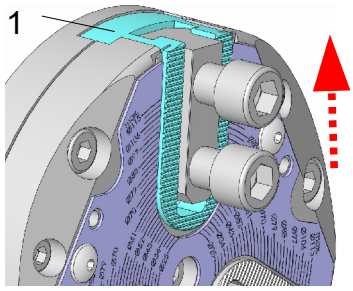


Fig. 13

1. Move the base jaws [1] in outermost position.

The coupling slider is thereby pulled to the front.

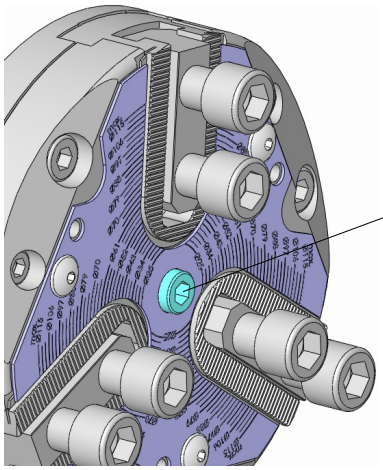


Fig. 14

2. Turn back [out] the centric operating screw [2] until it is about 3mm out.

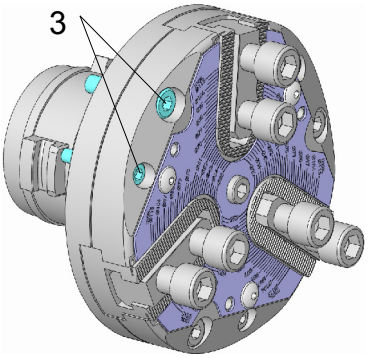


Fig. 15

3. Remove the mounting screws [3]:
   - either the mounting screws M6
   - or the mounting screws M8

   depending on the type of clamping device.

The jaw module is prepared for assembly.

6.3 Assembling of the clamping device

WARNING!

Danger of injury due to unintentional start-up of the tool spindle!

Unexpected start-up of the tool spindle can cause severe injury.

- Prior to switching on automatic mode close all protective doors or hoods that are present on the machine tool.
- Unscrew all eye bolts from the clamping device and remove them from the interior of the machine.
- Only run the machine in set-up mode or jog mode.

WARNING!

Danger of injury due to vertical suspended spindle!

Bending into the machine work are when assembling overhead can cause severe head injuries.

- Secure components prior to overhead assembly.
- For assembly on a vertically suspended spindle always use a suitable mounting aid.

6.3.1 Assembly of the jaw module

WARNING!

Danger of injury due to vertical suspended spindle!

Bending into the machine work are when assembling overhead can cause severe head injuries.

- Secure components prior to overhead assembly.
- For assembly on a vertically suspended spindle always use a suitable mounting aid.

Special tools required:

- Allen wrench SW5 / SW6

1. Put the machine into set-up mode.
2. Remove all tools from the machine's interior.
3. Reduce the clamping pressure of the machine to lowest level.
4. Move the drawtube of the machine into front end position [release position].

Note the position of the torsional safety!

5. Place the jaw module on the chuck.

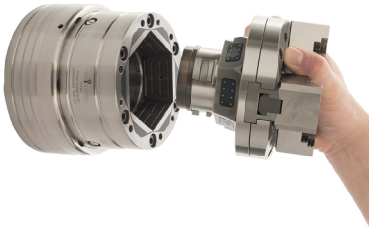


Fig. 16

Fig. 17

6. Screw in the 3 mounting screws
   - 3xM6 at SPANNTOP nova / TOPlus and/or.
   - 3xM8 at SPANNTOP mini / TOPlus mini

   and tighten them firmly with the correct tightening torque, see chapter »Maintenance«.

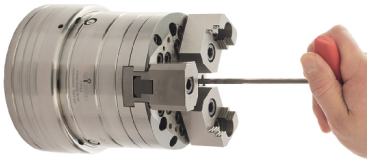


Fig. 18

7. Screw in the central screw till end.

WARNING!

The central screw now must

- be flush to the front side
- be about 1 mm deeper than the cover sheet

Please refer to chapter »6.5 Control of the stroke position«

8. The coupling jaws are now operated and engage to the chuck coupling. The jaw module is coupled.

CAUTION!

Risk of injury!

When assembled incorrect, the clamping force may not be sufficiently transferred.

Too low clamping force can lead to the ejection of the workpiece.

- Make sure that the central screw is mounted correctly.
- Move the machine into release position!

State of release position:
WRONG assembled

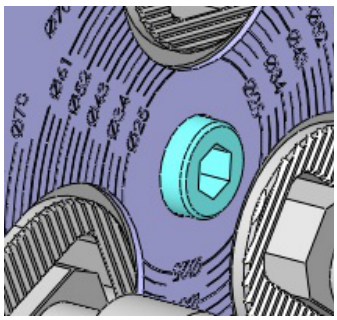


Fig. 19

Central screw protrudes

State of release position:
CORRECT assembled

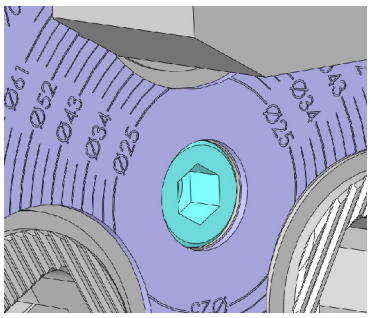


Fig. 20

Central screw deepened about 1mm

The jaw module is assembled.

6.3.2 Assembly of the jaws

Special tools required:

- Allen wrench SW10

1. Put the machine into set-up mode.
2. Remove all tools from the machine's interior.
3. Reduce the clamping pressure of the machine to lowest level.
4. Move the drawtube of the machine into front end position [release position].

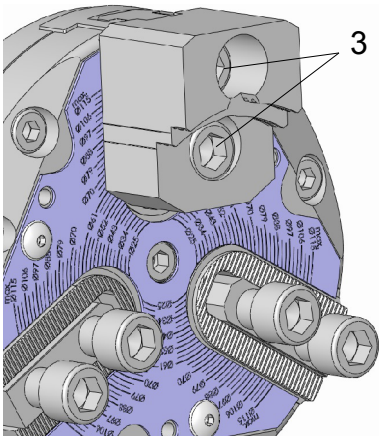


Fig. 21

NOTE!

Material damage due to incorrect tightening torque!

By incorrect tightening torque components can be damaged.

- Notice the permissible [maximum] torque of 100 Nm!

5. Assemble the top jaws
   - Put on the top jaws.
   - Position the jaws by the marking and the scale on the cover plate.
   - Tighten the screws [3] with the tightening torque of 100 Nm .

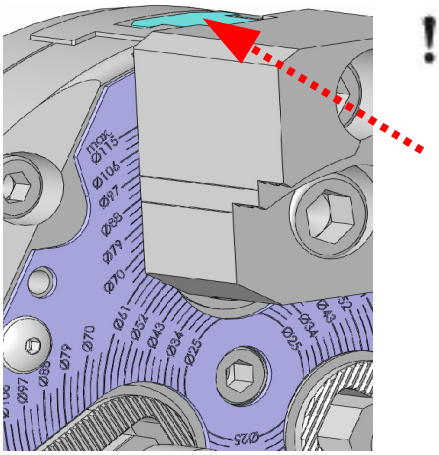


Fig. 22

NOTE!

Material damage caused by exceeding the maximum position!

By exceeding the maximum position, the strength of the component is no longer ensured.

- In greatest position the slot nut must maximum be flush with the outer diameter of the base jaws!

When inserting the claw jaws and pushing into the smallest position the specified clamping diameter is achieved.

Example: Jaw module size145 clamping-Ø 79

- Screw the claw jaws onto the slot nut without tightening, so the claw jaw is still movable
- Push the claw jaws completely inside to the end-stop
- Pull back until they engage to the next possible gearing
- Tighten the claw jaws.

The clamping diameter of 79 mm is reached.

When clamping beginning at Ø 82 the claw jaw can be set by 1 tooth to the outside. The clamping range is increased by 3 mm.

6.3.3 Boring the soft jaws

Special tools required:

- Allen wrench SW10

NOTE!

Material damage due to component fragmentation!

Incorrect boring of the soft jaw can cause component failure.

- Observe the max. boring contour, see figure below!

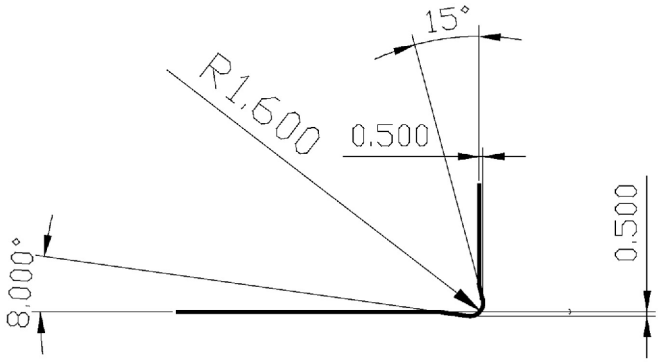


Fig. 23

Always assemble the soft jaws in suitable position for workpiece clamping.

- By positioning the jaws in the smallest possible area the centrifugal loss is minimized.

1. Put the machine into set-up mode.
2. Remove all tools from the machine's interior.
3. Reduce the clamping pressure of the machine to lowest level.
4. Move the drawtube of the machine into front end position.
5. Adjust the clamping force to the level in which the workpiece will be clamped to achieve the best possible concentricity.
   Pay attention to the maximum allowed clamping force!

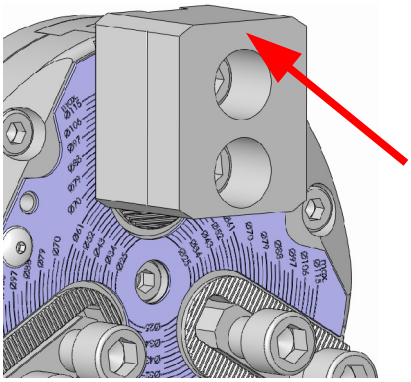


Fig. 24

NOTE!

Material damage due to component fragmentation!

Component fragmentation due to wrong boring of the big diameters.

- When boring the big diameters
  - from ø190 to ø 200 mm for size 215
  - from ø105 to ø 115 mm for size 145

  the jaws must be assembled with the wide side facing out!

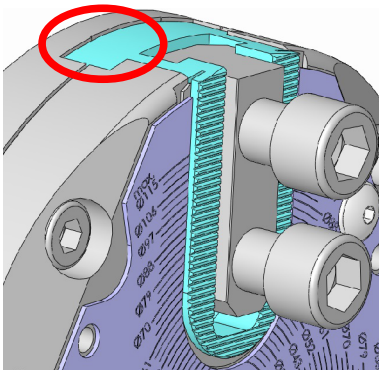


Fig. 25

6. Set the jaws in their future clamping position by inserting a round material in the center of the jaws.
   - The clamping position is reached when the base jaws are flush with the outside of the circumference. A reserve clamping stroke is ensured.
7. Bore the jaws in the usual way.

NOTE!

Material damage due to lack of precision!

Clamping jaws for highest repeatability must be bored and/or grinded out in the clamping device under clamping pressure.

When boring and/or grinding out make sure, that the loading ring or loading plug is clamped by the top jaws and not from the base jaws.

8. Check the position of the base jaws and the reserve stroke by a test clamping.

6.4 Tests

NOTE!

Material damage due to damaged adaptation clamping device!

A damaged, incomplete, or unbalanced adaption clamping device can significantly damage or even destroy the machine tool and the work piece.

- Only use complete and properly assembled adaptation clamping devices.
- If in doubt contact the manufacturer.

Ensure the following points prior to each installation and start-up of the adaption clamping device:

- The adaption clamping device must be undamaged.
- All cylindrical screws of the adaptation clamping device must be present and tightened with the proper tightening torque.
- The set RPM of the machine tool should not exceed the maximum permissible speed of the adaption clamping device; see chapter »Max. RPM«.
- The maximum drawtube force specified on the perimeter of the adaptation clamping device must not be exceeded.
- The clamping pressure of the machine is sufficiently high to clamp the workpiece securely.
  Of all the specified draw forces and pressure forces the lowest values are always to be used.
- All assembly tools must be removed from the interior of the machine.
- Adaptation clamping device and work piece must be compatible – check the clamping diameter regularly.
- The workpiece is clamped by a sufficient workpiece clamping in the adaptation clamping device.

6.5 Control of the stroke position

WARNING!

Crushing danger from moving parts!

Crushing danger from moving parts during controlling the stroke position!

Gaps, caused while controlling the stroke position, can cause severe injury.

- Only do the controlling of the stroke position with assembled changing parts.
- Only run the machine in set-up mode or jog mode.

Release position

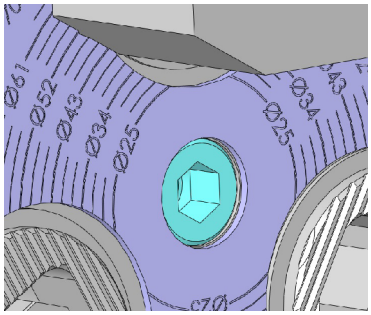


Fig. 26

Clamping reserve

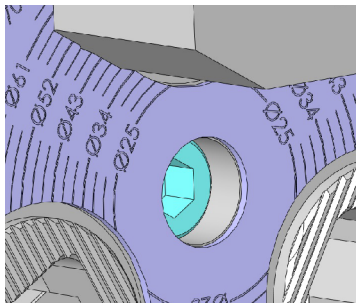


Fig. 27

Clamping position

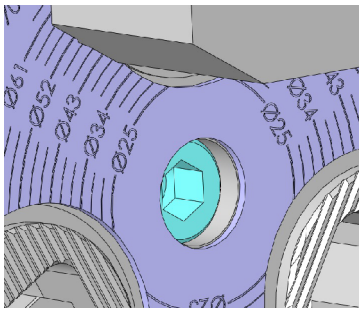


Fig. 28

6.6 Activities after production is concluded

1. Move the clamping device into unclamped position.
2. Switch off the machine tool and safeguard it from being switched on again.
3. Open the protective door or hood.
4. Clean the clamping device and a possibly mounted adaptation clamping device and adapter of chips and production residues using a soft, lint-free cloth and oil them lightly.
5. Close the protective door or hood.

7 Disassembly, subsequent storage, disposal

If there is break in production that lasts longer than 3 days, the clamping device must be disassembled and properly stored in accordance with the manufacturer's specifications [see section »Transport, packaging, storage«].

Prior to disassembling:

- Put the machine in set up mode.
- Remove fuels and auxiliary materials, as well as residual processing materials and dispose of these items in an environmentally-responsible manner.

7.1 Safety

Safeguarding against restart

DANGER!

Life-threatening danger if restarted without authorization

When disassembling there is danger of the energy supply being switched on inadvertently. This poses a life-threatening hazard for persons in the danger zone.

- Prior to starting the tasks switch off all energy supplies and safeguard them from being switched on again.

WARNING!

Danger of injury due to falling components!

When mounting components can fall and cause severe injury and material damage.

- Two people are always required for this task.
- Use a crane.
- For assembly on a vertically suspended spindle always use a suitable mounting aid.

7.2 Disassembly of the jaw module

WARNING!

Danger of injury due to vertical suspended spindle!

Bending into the machine work are when assembling overhead can cause severe head injuries.

- Secure components prior to overhead assembly.
- For assembly on a vertically suspended spindle always use a suitable mounting aid.

7.2.1 Disassembling the jaws

Special tools required:

- Allen wrench SW10

1. Put the machine tool in set up mode.
2. Remove all tool from the interior of the machine.
3. Set the clamping pressure of the machine on the lowest setting.
4. Move the drawtube of the machine into the front stop position [release position].

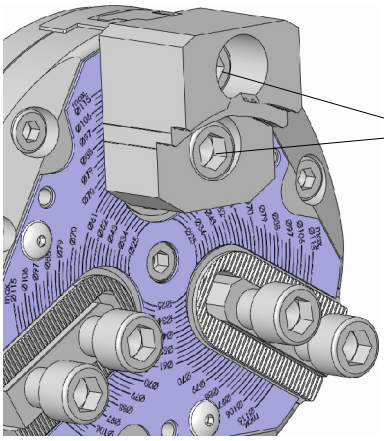


Fig. 29

5. Loosen and remove the screws [3].
6. Remove the top jaws.

The jaws are disassembled.

7.2.2 Disassembling the jaw module

WARNING!

Danger of injury due to vertical suspended spindle!

Bending into the machine work are when assembling overhead can cause severe head injuries.

- Secure components prior to overhead assembly.
- For disassembly from a vertically suspended spindle always use a suitable mounting aid.

- Special tools required:
  - Allen wrench SW5 / SW6

1. Put the machine tool in set up mode.
2. Set the clamping pressure of the machine on the lowest setting.

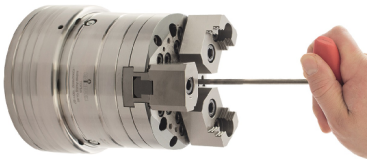


Fig. 30

3. Move the drawtube of the machine into the front stop position [release position].
4. First turn back the central screw.
   The coupling jaws are actuated and release the coupling of the chuck. The jaw module is uncoupled.

Fig. 31

5. Loosen and remove the 3 mounting screws.

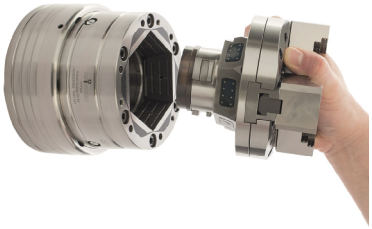


Fig. 32

6. Remove the jaw module from the clamping device.

The jaw module is disassembled.

7.3 Subsequent storage of the clamping device

The clamping device must be cleaned and treated with corrosion protection for subsequent storage [see section »Cleaning«].

NOTE!

The storage conditions are specified in the section »Transport, packaging and storage«.

7.4 Disposal

If a return or disposal agreement has not been concluded, then recycle disassembled components.

CAUTION!

Risk of injury due to leaking fluids!

Hydraulically or pneumatically operated clamping devices may contain residues of liquids. Uncontrolled leakage of fluids can lead to severe injuries.

- Open the pressure relief screw and drain remaining liquid.
- Discard the liquid.

NOTE!

Improper disposal causes environmental damage!

Lubricants and other auxiliary materials are subject to treatment as special waste, and should only be disposed of by approved specialist companies!

NOTE!

Composite materials!

For disposal clamping devices which include composite materials [mineral cast, CFK] must be returned at HAINBUCH!

Local municipal authorities or specialized disposal companies provide information on environmentally-responsible disposal.

8 Maintenance

Environmental protection

Comply with the following instructions for environmental protection when performing maintenance work:

- At all lubricating points where lubricant is applied by hand, remove escaping, used, or excess grease, and dispose of it in accordance with applicable local regulations.
- Collect used oil in suitable containers and dispose of it in accordance with applicable local regulations.

8.1 General

Cleanliness of the appropriate end-stop as well as the guidance diameters are conditions for reaching the concentricity and perpendicularity tolerances. Clean these surfaces with an appropriate cleaner.

CAUTION

Danger of injury due to improper handling of cleaners!

Improper handling of cleaners can cause health impairments.

- Always comply with the safety data sheets and guidelines provided by the manufacturer of the cleaning agent for handling/using the cleaners.

CAUTION

Danger of injury due to loss of clamping force!

Fouling of the clamping device can cause the clamping device to lose considerable clamping force.

- Always comply with the maintenance and cleaning intervals specified in this manual.
- In conjunction with the maintenance intervals, regularly check the maintenance status of the clamping device through clamping force measurements.

NOTE!

Material damage due to use of the wrong cleaning agent/cleaner!

Seals and clamping elements can be damaged due to use of the wrong seals and clamping elements.

- Do not use any solvents that contain ester or polar solvents for cleaning purposes.

8.2 Cleaning

NOTE!

Material damage if cleaned with compressed air!

Cleaning the product with compressed air can force metal chips into thread and grooves. This can damage or even destroy the product.

- Never clean the clamping device with compressed air!

- Auxiliary material required:
  - Ester-free, non-polar cleaning agent
  - Soft, lint-free cloth

1. Clean all the components with cleaning agent and a cloth; remove all oil and grease residues.

8.3 Preservation

NOTE!

The jaw module is permanently lubricated and must usually not be relubricated.

If a lubricating during service / maintenance work is required, please note the following points:

- Significant degradation of the efficiency if not lubricated.
- When lubricating with universal grease the efficiency already worsened in a short period.
- When lubrication with special grease there is almost no loss in efficiency.

- Special tools required:
  - Special grease 2085/0003
  - Soft, lint-free cloth

1. Hone all the bearing surfaces of the jaw module with an oil stone.
2. Lightly grease all allen screws. Remove excess grease with a cloth.
3. Screw all allen screws into the jaw module again and tighten them hand tight.

   For subsequent storage tightening the allen screws hand tight suffices. This facilitates re-commissioning and protects the allen screws.
4. Lightly grease all interior and outer surfaces of the jaw module. Remove excess grease with a cloth.
5. Pack the jaw module airtight in foil. Place it on a level, impact-free storage location and safeguard it from falling.

8.4 Use of lubricant

With the usage of lubricant you may only use grease that corresponds to the requirements concerning bond, pressure-stability and solubility in lubricating coolant.
In addition no dirt particles may be in the grease; they cause run errors if they come in in-between two mating surfaces.
We recommend for this the following lubricant:

HAINBUCH grease

see product information

Alternatives:

Lubricant	Manufacturer	Product
Universal grease	MicroGleit	GP 355
	Klüber	QNB 50
	Zeller & Gmelin	DIVINOL SD24440
	Bremer & Leguill	RIVOLTA W.A.P.
Special grease	Klüber	MICROLUBE GL 261

8.5 Maintenance schedule

Maintenance tasks are described in the sections above that are required for optimal and trouble-free operation.

If increased wear is detected during regular inspections, then reduce the required maintenance intervals according to the actual indications of wear.

Contact the manufacturer, [see the service address on the back] if you have questions concerning maintenance tasks and intervals.

By using the clamping device in the 3-shift operating it should be maintained as follows:

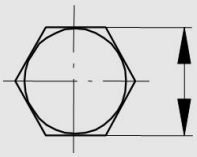
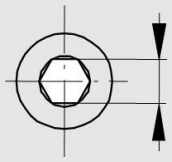
Interval	Maintenance task
Daily	Visual inspection and complete cleaning in case of heavy contamination [see section »Cleaning«]
Weekly	Clean the jaw module [see section »Cleaning«]
After latest 1600 operation hours	Lubricate the jaw module with special grease [see section »Use of lubricant«]

8.6 Bolt torque

Metric ISO thread

The guide values for bolt tightening torque for achieving the highest permissible pre-tension for metric ISO thread are specified in Nm in the table.

- Total friction coefficient μ_{tot} = 0,12
- 90% utilization of the apparent limit of elasticity

Diameter	 [mm]	 [mm]	Torque for screw quality 10.9 [Nm]
M 4	7	3	4
M 5	8	4	7
M 6	10	5	12
M 8	13	6	25
M 10	17	8	50
M 12	19	10	100
M 16	24	14	220
M 20	30	17	400
M 24	36	19	600

The table shows the maximum permissible values and does not include any other safety factors. Knowledge of the applicable guidelines and configuration criteria are the prerequisites.

9 Trouble shooting

Possible fault causes and the tasks to correct these faults are described in the following section.

If faults occur more frequently, the maintenance intervals must be shortened to correspond to the actual system load.

Contact the manufacturer if there are faults that cannot be corrected by following the instructions below; see the service address on the back of this operating instruction.

9.1 Safety

Trouble shooting

The following always applies:

1. For faults that pose a direct danger for personnel and or property immediately execute the emergency-stop function of the machine.
2. Determine the cause of the fault.
3. If correction of the fault requires work in the danger zone, put the machine in set-up mode.
4. Immediately inform the responsible parties at the installation site of the fault.
5. Depending on the type of fault, either have authorized specialized personnel correct the fault, or correct it yourself.

   The trouble shooting table provided below lists personnel who are authorized to correct the fault.
6. If there is a fault that was not caused by the clamping device the cause of the fault may be in the machine area. See the operating manual for the machine in this regard.

9.2 Trouble shooting table

The faults and causes described in the fault table are based both on the clamping device as well as the adapted jaw module.

Fault	Possible cause	Fault correction	Corrected by
Clamping force is too low	Work piece is under-dimensioned	Replace with a suitable clamping head	Specialist
	Insufficient hydraulic pressure on the clamping cylinder	Check the machine-side hydraulic aggregate	Hydraulic specialist
	Defective clamping cylinder or blocked draw tube	Contact the machine manufacturer	Machine manufacturer
Dimensional deviation on the work piece	Concentricity error of the clamping unit	Check the concentricity on the clamping taper and correct it if necessary	Specialist
	False assembly of the jaws	Check the distance value and correct if necessary.	Specialist
Dimensional deviation on the work piece	Contaminated clamping taper	Remove the jaw module and clean the clamping taper of the clamping device	Specialist
Formal defect on the work piece	Elastic deformation of feedstock that is subject to formal defects. After machining, the work piece returns to its original form.	Use feedstock with fewer formal defects.	Specialist
Workpiece drops out	Wrong assembly of the jaw module	Disassemble and reassemble the jaw module, see chapter »Control of the stroke position«.	Specialist

9.3 Start-up after corrected fault

After correcting the fault execute the following steps to start up again:

1. Reset the emergency-stop device
2. Acknowledge the fault on the machine tool controller
3. Ensure that no one is in the danger zone
4. Start the machine tool

10 Appendix

10.1 Service Hotline

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10.2 Representatives

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Mi	090 – 189	Ft	400 – 479	Si	600 – 659	He	750 – 799	Hs	920 – 949
Wt	190 – 289	Bo	480 – 499	Ti	660 – 699	Hs	800 – 819	Sb	950 – 969
Bs	290 – 319	Ft	500 – 549	Rt	700 – 709	Gg	820 – 829	Si	970 – 978
Bo	320 – 339	Hen	550 – 559	Rt	710 – 719	Hs	830 – 859	Ti	979
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